REFLECTIONS ON W. M. KAULA AND THE ORIGIN OF THE MOON

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In a single year, we have lost two giants in the study of solar system origin, V. S. Safronov and W. M. Kaula. During the '60's and '70's, Safronov advanced O. Yu. Schmidt's planetesimal hypothesis of planetary formation, to the point that it became a testable scientific theory. In the west, this work was virtually unknown until Safronov's book was translated, in some part through the insistence of Bill Kaula. Armed with this treatise, Bill urged his graduate students to take on the task of recreating the solar system from scratch, using computers available to us in the west, and Safronov's analytical recipes as a starting point. Obviously this task was a bit too daunting for a single student, so a number of us bit off little pieces. The piece I chose was to numerically test the co-accretion model of lunar origin, which had been advanced by Safronov's wife, E. L. Ruskol, in a series of papers in the Soviet Astronomical Journal which had been translated into English. The result of my work was to produce a model which was dynamically compelling (if it didn't happen this way, it should have), except for failing to explain the compositional difference between the Earth and the Moon. In the ensuing 25 years, attention has turned mainly to the "giant impact" hypothesis of lunar origin. It now appears that this theory is cosmochemically compelling, but dynamically it doesn't work. In this paper I will review briefly the work I did on lunar origin in collaboration with Bill Kaula, and compare that work with recent hybrid models of lunar origin which incorporate similar dynamical features.

This work was supported at the Jet Propulsion Laboratory, Caltech, under contract from NASA.